

purpose of this study was to observe the polytrauma population and to correlate lesions with initial blood sugar.

Methods: A prospective study was conducted of 204 patients polytraumatized between January 2006 and December 2007; this database is in conformity with the ethics committee. Patients were selected according to the admission code “polytrauma” with National Committee on Aeronautics Score System (NACA) score ≥ 4 . Blood analysis was performed as soon as the patient arrived. For each patient, the Injury Severity Score (ISS) was compared to the blood sugar level.

Results: The ISS and glycemia curve demonstrates a linear relation between the two values, especially for blood sugar concentration < 8 . Abdominal injuries always increase the level of blood sugar. Simple limb trauma or spine fracture did not impair glycemia, except when associated with open wound fractures, compression syndrome, or paraplegia. The average glycemia of pelvic trauma was 9.0 and the average ISS was 41. Head injury associated with abdominal or thoracic trauma always enhances glycemia when there are life threatening lesions associated. There was no correlation between ISS and age or sex.

Conclusions: High glucose levels may indicate serious lesions according ISS levels; this correlation provides valuable information for prehospital triage and transfer to the best hospital system.

Keywords: blood sugar; glycemia; Injury Severity Score; polytrauma; triage

Prehosp Disaster Med

Resilience of Hospitals in Crisis

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Introduction: The health system and general hospitals in Israel constitute one of the main pillars for preparing for emergency situations and improvement of hospitals to cope with varying threats.

Background: The 2nd Lebanon War and the ongoing confrontation around Gaza brought a significant change in the perception of threat, emphasizing the fact that in every conflict, the civilian home front will be one of the main objectives of injury.

Despite these high levels of preparedness, hospitals in northern and southern Israel found themselves in a long-lasting crisis situation. While they were under missile attacks, they were expected to be fully functional level. This long emergency situation was a real test of organizational strength and resilience, and emphasized the need for hospital functioning abilities as an essential and decisive component in creating and reinforcing a sense of resilience of the hospital.

Proposed Model: The literature offers several models that discuss dealing with resilience in three key parameters that affect the resilience: (1) personal safety; (2) family safety; and (3) knowledge/preparedness.

During Operation Cast Lead, the three parameters model, which included the following issues was adopted:

1. *Personal Safety*—In order to improve the level of protection in the hospital, the wards from last floors or

one-floor buildings were transferred to shelters or other well protected areas;

2. *Family Safety*—Day care centers were opened within hospital facilities, to provide an adequate answer to disabled education system for the staff children. One of such centers included >300 children for about three weeks, thus allowed to approximately 95% of staff to continue their work; and
3. *Knowledge and Preparedness*—During routine hospitals are preparing emergency plans including the emergency deployment of their practice. The hospitals that have experienced this kind of emergency situation before managed by downloading hospital occupancy from 100% to 60% and transferring wards to protected areas in three hours.

Additional Findings: In addition to the parameters described above, several other components were found to be able to affect the hospitals resilience:

1. Independent, internal control and coping capabilities of the hospital;
2. Guarantee that essential workers stay in the hospital; and
3. Support of environmental factors including press.

Summary: Early and proper preparation of hospitals can affect all parameters affecting the resilience level of the hospital, which includes improving the level of protection, dealing with arrangements for child care, developing and drilling emergency plans, and guaranteeing that essential workers remain in the hospital.

The model was tested at two hospitals during a relatively small and limited conflict. More research required in more hospitals for the health system learning.

Keywords: hospital; Israel; preparedness; resilient; safe hospital

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Collaboration in Disaster Management

Interagency Collaboration Topology for Counteracting Global Threats

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Introduction: Counteracting global disasters and mitigating their consequences requires cooperative efforts of diverse national and international entities. Effectiveness of such cooperation depends on the information-sharing environment the agencies act within. In robust and productive information interaction that is reflected by its network topology is needed. The network topology is determined only by the graphical mapping of the configuration and connections between nodes (agency employees). This study

focuses on topology issues to enforce emergency information sharing networks and to make relations between pertinent national and international agencies sustainable.

Methods: An agent-based simulation model with competitive and collaborative agents was applied to perform a simple, quantitative analysis of interagency and international cooperation networks with diverse topologies. An essential distinction of the information network topologies of the entities was detailed. The fact that all the agents of an entity are not only in collaboration, but in competition as well—vertically (for agents of adjacent levels) and horizontally (for agents of the same level) was implied. It was assumed that interagency and international interaction is horizontal only. To collate diverse topologies, the parameters characterizing the network efficiency and robustness such as flows, capacities, centrality, and relative size of the largest cluster were used.

Results: The optimal topology for interagency and international interaction prefers top-rank links for “tree”(hierarchical) networks and corresponds with middle-rank horizontal links in other cases.

Conclusions: It is of great value to support top-level contacts and ties of middle rank agents of national and international agencies for effective counteracting to global threats.

Keywords: collaboration; disaster management; global threat; management

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Civil Defense Directives to Hospitals in Israel

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The directives for civil protection (Civil Defense) provided by the Home Front Command to hospitals in emergencies are vital to their uninterrupted function. These directives have to ensure the protection of the hospitalized patients and the hospital's staff as well as the continued functioning of the medical system.

Hospitals are complex organizations with needs and requirements not observed in other institutions. For example, patients are bedridden—they are dependent on fixed medical equipment and medical procedures, such as surgery or hemodialysis, that are being performed and cannot be discontinued during an alarm. Therefore, without pre-planned steps and preparedness, civil protection measures cannot be implemented immediately after the sounding of an alarm, except for mobile patients and visitors. These preparations include the transfer of medical wards to at least partially protected areas, the reduction of beds, and the evacuation of unprotected buildings and the upper floors of the hospital.

During national states of emergency in a total war, hospitals will have to function continuously, at full capacity, treating civilian and military casualties. Despite this, the experience in recent armed conflicts, such as the 2nd Lebanon War and Operation Cast Lead, hospitals were not utilized to their capacity. During these conflicts, a number of hospitals were under missile bombardment, while only few numbers of casualties were admitted from the front line and the rear zones of the country.

In Operation Cast Lead, an internal re-organization in hospitals near the front line provided improved defense, but decreased the number of hospital beds in the Soroka Medical Center by 80% and by 30% in the Barzilai Hospital. New protection policies of hospitals during emergencies are defined by the optimal utilization of the hospitals' capacities, including maximum protection of patients and staff.

The principles of such policies include the vacation of beds, internal reorganization, and transfer of essential hospital wards to protected areas in order to ensure continued work and functioning. Such a re-organization was carried out during the 2nd Lebanon War and Operation Cast Lead in hospitals. The new instructions for the protection of hospitals provide uniform directives, confirming with the states of preparedness within three defined levels: (1) Level A—hospitals are not in a threatened area and continue to function in a regular emergency mode; (2) Level B—hospitals are located in a threatened area, but the number of casualties is low, reorganization will provide improved security to patients and staff; and (3) Level C—hospitals are under direct threat and the number of casualties is high. Changes are limited, and influenced mainly by hospitalization needs.

Keywords: civil protection; emergency; hospitalization; hospitals; medical system; reorganization

Prehosp Disaster Med

A Unique Tertiary Medicine Model for Israeli Defense Forces Soldiers

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Introduction: In Israel, there are no military hospitals. Therefore, tertiary care for ill or wounded soldiers is administrated exclusively by civilian hospitals. Nevertheless, the Israeli Defense Forces (IDF) remains responsible for the health and welfare of hospitalized soldiers, and the Medical Corps is informed and involved in their management.

In order to assure this coordination between the civilian centers and the Medical Corps, there are special army medical units located within civilian hospitals. These units, which originally were established as registration units for hospitalized soldiers, are called “Yakar units” (meaning precious in Hebrew). The “Yakar units” have evolved, and currently provide various medical, military, and welfare services for hospitalized soldiers and their families.

Methods: The various roles of the army medical units in the Israeli 24 civilian medical centers were evaluated, including: (1) registering and controlling hospitalized and outpatient personnel; (2) facilitating coordination between the hospital and the army in every necessary aspect; (3) helping hospitalized soldiers connect with their families; (4) providing medical follow-up for hospitalized soldiers and managing their cases after discharge; (5) initiating medical counseling and conveying specialists when needed; (6) transferring soldiers from one hospital to another according to medical specialties or due to social reasons (convenience or request of the soldier and his family); (7) overseeing the welfare of the patients (bedside television, daily newspaper, transportation, etc.); (8) caring for and financing the needs